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MONTHLY REVIEW

Published by the

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ONEIDA, NEW YORK

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PRESIDENTS—MAY MESSAGE

Greetings to the Membership:

In view of the approaching Annual Meeting of our Society at Montreal, Canada, June 29, 30; July 1, 2, 1925, I feel in duty to you and the Society, to again call your attention to the EXTREME necessity of CAUTION and PRUDENCE in the selection and instructing of your DELEGATES to our Annual Meet. That they will be properly Qualified according to our LAWS, to represent you; And are fully and conscious as to the PROCEEDINGS and ETHICS of this OUR SOCIETY. And men of the Caliber necessary to obtain best results in our IDEALS, should they be selected as members of the SUPREME SOCIETY to govern destinies of the same, as every one of the DELEGATES who officially attends should remember that HE is being considered as a possible CANDIDATE for some OFFICE in the SUPREME SOCIETY, whether HE is selected or not.

I take this opportunity to thank every BRANCH, its Members and the Officers, for their fine co-operation with their Supreme Officers, in perpetuation of this MOST USEFUL INSTITUTION, or Organization of Foreman Electro-Plater Executives, during fiscal year of 1924-1925.

I also wish at this time to thank the Chairman and members of all the committee's, appointed by me during my tenture of Office, and to inform them that their commission from me will Officially expire with the closing of the 1925 Meet of the Supreme Society unless reappointed by the convention in session or the next Supreme President, this is Automatic and requires no resignations, and I hope no confusion.

I also wish to suggest a few HINTS of VALUE to BRANCH SECRETARIES, be sure and send in to the SUPREME SECRETARY'S Office in time the ANNUAL REPORT sheets and CREDENTIAL Sheets and also inform the DELEGATES of your BRANCH as to the importance of filing his CREDENTIALS with the CREDENTIAL Committee as soon as possible after arriving at the Convention meeting PLACE, thus avoiding any delay in seating of the DELEGATES, that we may present our Convention to our CANADIAN BROTHERS in a Creditable manner, as well as a Properly regulated Body or Organization of PROGRESSIVE MEN.

I further wish at this time to call attention to the Officers of all our BRANCHES to keep in MIND Art IX.—Sect. 3 and 4, Page 22 of the Constitution and By-laws thereby avoiding embarrassment of your DELEGATES to this our MOST important MEET of the year, I am,

Respectfully Yours,

F. J. HANLON,
Supreme Pres., A. E. S.

NOTICE
CONVENTION ATTENDANCE

On June 1, 1,500 manufacturing concerns, who maintain plating departments, will receive a letter from the Montreal Convention Bureau urging them to come to our Convention. On June 12 your Supreme Secretary will send another letter to them calling attention to the benefit to be derived by the concern in sending their foreman plater and superintendent, as well as coming themselves. If your local secretary has performed his duties by forwarding a list of manufacturers, your company will receive these letters.

Listen, fellows, follow this up by mentioning the Convention to your boss about June 5, and then again about June 15. Show him the program which you will have received by that time and explain to him why you think it would be of benefit to your company for you to attend the Convention and ask him for his answer.

E. J. MUSICK,
Supreme Sec'y-Treas.

"SELF-SUSTAINING NICKEL SOLUTION"

By Mr. William Lamoureux

Read at Indianapolis Branch

It has once been said by one of our former editors, that the American Elctroplaters' Society will be just what the members make it. In my opinion, this statement may be applied to the different branches as well. Therefore, we should put forth our best efforts to promote the welfare of our particular branch, and the society at large, by contributing as many interesting subjects as possible, so as to inject a lively spirit into our meetings and thereby attain the desired results.

With this purpose in view, I will endeavor to explain the result of my observations, during the many years I have spent at nickel plating; based on practical experience only, as I have no knowledge of chemistry.

While the average plater is familiar with the subject I am about to discuss, I cannot help but feel that it will be of some interest. We may all do successful plating, but our methods may vary somewhat, and by exchanging views on any subject we are bound to derive some benefit from our association. To the older men, this paper will be somewhat of a review of his own experience, but the younger men may gain some points which will be helpful to them.

We read and hear a great deal these days about the modern formulas for nickel solution, such as sulphate solution with a conductive agent of some kind and with agitation, etc. Among other things, platers will tell us that a solution, made from their particular formula, is absolutely self-sustaining. To make such a statement, without reservation as to the different conditions to cope with in the plating room, is, I believe, assuming too much. In my opinion, no solution is self-sustaining merely due to the formula from which it is made. There are other conditions which are necessary. Also, a great deal depends on the plater himself, he can make or ruin his solution.

During my experience, which now extends over quite a few years, I have been very successful along this line. Today I am operating a solution to which I have not added either single or double nickel salts for five years. Further,

aside from the splendid results enumerated, my solution has been as near as possible to the neutral point, making it absolutely unnecessary to add either acid or alkali during the above period.

My solution is of the old style and is therefore not expected to compare in metal contents with the modern solution. However, it does compare very favorably with a newly made solution of its kind as shown by the following:

It is generally agreed that in making a new solution, one gallon of water will dissolve nine (9) ounces of double salts and, if as we are told, double salts contains 15% metal, we will have a solution, the metal contents of which will be 1.35 ounces per gallon. Whereas, a recent analysis of my solution has shown it to contain 1.75 ounces metal per gallon, although no metal has been added to it for five (5) years.

My method in keeping a solution self-sustaining is to add water once per week, to make up for evaporation, and depend on the anodes to supply the metal to the solution. I contend that if we can make a solution by getting the metal entirely from the anodes, it is also possible to maintain the metal contents by your every day work, providing we use a little common sense.

I will enumerate the most essential conditions necessary to have a self-sustaining solution.

First: You must have a large surface of anodes, which at all times should be larger than the surface of work to be plated at the cathode. In this manner the metal set free at the anodes which is not deposited on the work will be distributed through the solution and supply the metal contents as fast as it is taken out by the deposit. Another important point in having a large surface of anodes, I think, is the saving effected thereby. By using anodes five to six inches apart, I am convinced that the same amount of anodes would be consumed in much less time. Besides, it would be necessary to add metal from time to time which would further add to the operating cost. I know that in some places it is hard to get your employer to buy anodes in sufficient quantities, but if you convince him of the eco-

nomic value of this method, I believe you will have no trouble in securing them.

Second: The second essential thing for a self-sustaining solution is a generator of sufficient capacity to give you ample current at all times.

Third: The third essential thing is the care to be exercised in removing work from the solution. A large amount of solution can be wasted in this manner in a week's time. Plating room help should be trained to allow the solution to drip off in the tank when unloading.

Fourth: The fourth essential thing to keep a solution self-sustaining, and the one I consider the most important, is the loading of tanks. Unless the load is such that your anodes surface is always larger than the surface of work to be plated, you will have no success. In the different positions I have undertaken, where a predecessor had failed, I have found that in 95% of the cases failure was due to the overloading of tanks. In one particular case the overloading was better than 100%, the result being the work was pitted, hard, and more than 35% of it peeled. What did not peel was so hard that it was almost impossible to buff it. Although their anode surface was fairly large, the solution was weak in metal and very acid. They had sufficient current, same consisting of two fifteen hundred ampere generators to operate nine tanks of approximately three hundred gallons each. However, under such an overload they became so overheated they could not give the proper current, necessitating two or three hours' time to plate a load of work. Those generators, I estimate, were actually running the equivalent of eighteen tanks.

After replenishing and neutralizing the solution, I cut the load in half and was then able to turn out a load for each tank every hour, thereby keeping up the work nicely and at the same time reducing peeling to a minimum never known before in that factory. Eventually I brought the solution to a self-sustaining basis, and with the reduction of the load as mentioned, the electrical engineer asserted we could almost operate the nine tanks with one generator.

These are conditions under which no solution could be self-sustaining, I do not care from what formula it is made.

Some platers, in their anxiety to keep up their work, will load up tanks using very little judgment, thinking they are making up time in so doing. In reality, the opposite is the way to get production and keep out of trouble.

In discussing this subject, I do not contend that my solution is scientifically correct, not being a chemist. But I do know that I am doing what I consider very good nickel plating. My work is subjected to the worst kind of rough treatment, such as hack-sawing, grinding, drilling and counter-sinking, without consideration to the plating. We have round steel rods from one-eighth to one-half inch in diameter which are bent after plating, to facilitate the polishing. We also plate sheet steel of twenty-gauge thickness in copper and nickel which is afterwards bent at different angles in a tinner's brake. None of this work is given less than forty-five minutes' plate and I can truthfully say that my failures are so few that I consider the plating as perfect as it is possible to have it.

In operating solutions in the above manner in an extremely cold room, I have had them to crystalize on the anodes and sides of the tank below the surface of the solution, even after being operated without the addition of metal for years. This certainly shows good metal contents.

The above is the method I have followed through my many years of experience, having been very successful at all times. I attribute my success to the fact that it is absolutely impossible for a solution operated in the manner described to get out of order, unless, of course, foreign substance is carried into it by careless help. It is just the method for one like myself, who is not familiar with the scientific points of the plating game so prominent these days. Although lacking this scientific knowledge, we who have plated before the invention of the volt meter, the ampere meter and the rheostat, have learned a few fundamental principals of what is now a great scientific game, which we cannot forget. We learned them by hard knocks, worry and loss of sleep. I can recall when difficulties confronted me, how I went to work every morning with a determination and a new idea. Finally, when I stumbled onto the thing I wanted, it was impressed on my mind forever

and, following the custom of those days, this information was kept secret. Thanks to the A. E. S., this custom has been abolished and I, along with the many other members, am glad to share one another's difficulties and endeavor, through this wonderful society to help conquer them.

There are now many new methods to do what we did years ago; methods which are more rapid, more progressive and far advanced so far as production is concerned, but I often wonder if they are doing better plating than we did in the past, or even better than we are doing today, by the old method?

I certainly am proud of my membership in the A. E. S., as I love to watch the progress which is being made in this wonderful science, which we use to call just a "trade." When we "old-timers" are dead and gone, I know that the scientific men of this society will continue with the advancement of this science by endless research for better things. However, I cannot help but believe they will harbor a feeling that we are deserving of credit for the foundation we left them to build upon, though such foundation be ever so small.

PLATING SOLUTION ANALYSIS NOTES

Cleveland F. Nixon

The value of chemical control of plating solutions is now well understood. And so it will be unnecessary to dwell upon this phase of my subject.

The tendency is to control by chemical analysis every plating soltuion variable that lends itself to such control. Thus, in regard to nickel sulphate solutions, nickel, acidity, chlorine, magnesium, boric acid, and even ammonia and sulphur and iron are analyzed for. In copper cyanide solutions copper, free cyanide, total cyanide, carbonates are sought. And thus through the whole gamut of plating baths.

It is the purpose of this paper to give our experience in performing a few of those determinations which are perhaps a bit mode difficult than the rest. Under our rather loose title we have, therefore, a discussion of the analysis of boric acid in nickel solutions, and also comments and procedures for the cyanide of copper cyanide baths.

Boric Acid

Boron is a difficult element to determine. In no way does it lend itself to gravimetric methods of analysis, since there are not completely insoluble compounds of boron known. However, when in the form of boric acid, boron may be determined volumetrically by titration with a standardized solution of caustic soda. Phenolphthelein is the indicator. The procedure for this determination is as follows:

Choose a sample of appropriate volume and dilute to 100 cc. with boiled distilled water. (It is necessary to boil the water, as ordinary distilled water will contain sufficient carbon dioxide dissolved in it to materially affect the end point.) Add to this two or three grams of mannitol, or 25cc. of neutral glycerine, and eight drops of indicator, and titrate with the standard caustic until the first permanent pink coloration appears. Then add one half gram more of the mannitol, or 10 cc. of glycerine, and shake. The pink coloration will disappear, owing to the further reaction induced by this addition between the remaining boric acid and the sodium hydroxide. When a few more drops of the caustic have been added, the pink will reappear. Another addition of a half gram of mannitol, or 10 cc. of glycerine should be made, and the titration continued, until further addition of mannitol no longer causes the pink coloration to disappear on shaking. Usually two or three half gram additions suffice. Since it is know that 1 cc. of N/10NaOH is equivalent to .0062 grams of H_3BO_3, it is a simple matter now to calculate the amount of boric acid present.

(It may be noted that after trying both glycerine and mannitol, we have come to use mannitol entirely, for the glycerine, in addition to being very viscous and hard to handle, is always somewhat acid, and must be neutralized before it may be used.)

This procedure does very well for solutions which contain no interfering compounds. For nickel plating solutions however, it is without adaption quite unsuitable; for, as soon as the sodium hydroxide is added, the nickel is thrown down as the voluminous apple green nickel hydrate, which

substance effectively masks any end point that might be subsequently obtained.

However, in nickel sulphate electroplating solutions, nickel is the only substance which interferes with the titration of boric acid. If in some way the nickel could be removed without upsetting the equilibrium of the sensitive boric acid, the simple titration could proceed without more ado.

There are three ways in which the nickel may be removed:

Ist. The dimethyl glyoxime method.

From a faintly ammoniacal solution, nickel may be precipitated quantitatively as nickel glyoxime by the addition of an excess of dimethyl glyoxime dissolved in alcohol. The precipitate formed is of a ebautiful red color, but exceedingly bulky. Further, since the dimethyl glyoxime is worth $5.00 an ounce, the process is expensive.

2nd. Electrolytic separation method recommended by Messrs. Blum and Hogaboom in their book already mentioned. In this method, the nickel is removed by plating on a platinum cathode; then, in the remaining solution, the sulphuric acid formed is neutralized by caustic soda, using methyl orange; phenolphthalein is added, and the titration carried to the boric acid end point as above. This method has the advantage of being faster than the one I am to propose, but it requires more expert handling, and is, as Mr. Blum points out, at the best but on approximation.

3rd. The addition of any reagent neutral to phenolphthalein which forms a completely insoluble precipitate with nickel. Of such inorganic reagents there are but two—potassium ferrocyanide and potassium ferricyanide. Nickel ferricyanide however, comes down as a very gelatinous brown precipitate which resists all efforts to separate it from the mother liquid—and so is not suitable for our purpose. On the other hand, potassium ferrocyanide reacts with nickel sulphate to produce nickel ferrocyanide, an apple green compound similar in character to the nickel ferricyanide, but fortunately is not so gelatinous. While this precipitate could be with difficulty filtered off or removed by centrifuging, for all ordinary work, it was found

to be most satisfactory to permit the solution containing the precipitated nickel to stand over night. In the morning, the nickel ferrocyanide will be found to have settled to the bottom of the container, leaving clear liquid above to be drawn off with pipette and titrated . It may be noted here that although pure nickel ferrocyanide is apple green in color, the precipitate from the nickel sulphate plating solution, is actually varying shades of blue. This blue color is due to the reaction of the iron, present as an impurity in the solution, and of potassium ferrocyanide, the result being ferriferrocyanide or prussian blue.

Following is the procedure by which we determine boric acid:

Pipette 10 cc. of sample into an Erlenmeyer flask celibrated to contain 500 cc. Make up to 400 cc. with boiled distilled water and add 5 to 10 cc. of aconcentrated solution of $K_4Fe(CE)_6$ and allow to settle for a time. Then add cautiously down the side of the flask, a few drops of the $K_4Fe(CN)_6$ to determine whether all the nickel has been precipitated. If it is found that the nickel is all down, the solution may be made up to 500 cc. with boiled distilled water, mixed thoroughly, and allowed to stand over night, or until the precipitate has settled enough to permit a 50 cc. sample of clear solution to be drawn off. If the nickel is not all precipitated, a few cc. more of ferrocyanide should be added, and later, the testing process repeated. Care should be taken not to add a great excess of ferrocyanide. To proceed, titrate the 50 cc. sample of clear solution drawn off with N/50 NaOH as in the procedure already detailed.

Free Cyanide

Copper cyanide plating solutions are composed mainly of CuCN dissolved in NaCN. Besides this a certain amount of $NacO_3$ is added, and usually, hyposulphite as a brightener. It is upon the amount of NaCN present in the solution over and above the amount needed to dissolve the CuCN—the free cyanide that in a large measure determines the manner in which the solution will act. If the amount of free cyanide becomes very low, anode corrosion will be impaired. A film of CuO will form on the anodes, the copper content of the tank will begin to drop, and soon bad work

will appear. When the cyanide content becomes too high, anode corrosion increases beyond cathode deposition, and gassing increases at the cathode until finally, as the cyanide goes up, deposition of copper ceases altogether. It is therefore highly desirable that either the free cyanide or total cyanid content be known.

For free cyanide the method usually recommended is Liebig's silver nitrate method, using no indicator. Anyone who has used this method knows that the end point of this titration is painfully indefinite. To obtain checks even upon the same sample requires a great deal of experience, and it might be added, a vivid imagination. Moreover, just after an addition of hyposulphite has been made to the solution it is impossible to secure a determination of any kind —for after this addition, the first few drops of silver nitrate added will result in the formation of a dark brown precipitate of silver sulphide which renders, of course, all further progress out of the question.

When looking about for a means of remedying this condition, the most obvious plan was hit upon—that of reversing the volumetric nickel determination. In this determination a standard solution of NaCN is added to the nickel sample to be titrated until the heavy precipitate of NiCN which forms at the beginning of the determination redissolves as $Na_2Ni(CN)_4$ and the solution again becomes sparkling clear. To reverse the titration, a small amount of standardized nickel solution is placed in a flask and diluted as for the nickel determination. The copper plating solution of unknown free cyanide is placed in the burette instead of a standard NaCN solution and the titration carried to the same end point as above. When the NiCN precipitate cleared up and the solution becomes sparkling clear as before, it was assumed that the free cyanide of the unknown copper plating solution had reacted with the nickel sulphate to form $NiNa_2(CN)_4$, and the calculation made accordingly.

It was soon discovered, however, that this method did not check with the old silver nitrate method. Almost invariably the free cyanide, when determined by this method, would be found to be .2 to .4 ounces per gallon higher.

In an effort to improve further upon this analysis, and to discover if possible why the results of the two methods described differed, the following methods were sought out and tried:

1—Ammoniacal copper sulphate.

2—Iodine titration.

3—Various distillation processes.

4—Mercuric chloride with and without $K_2Fe(CN)_3$ as indicator.

5—Total cyanide and copper from which free cyanide was calculated.

6—An improved silver nitrate titration.*

With the exception of the last three, these determinations are not of sufficient importance to warrant detailed explanation. Be it sufficient to say that the first three ammoniacal copper sulphate, iodine titration, and various distillation methods, are entirely unsatisfactory, and that each of the last three, mercuric chloride with and without $K_4Fe(CN)_6$ as indicator, total cyanide and copper from which free cyanide was calculated, and the improved silver nitrate titration, give results which were satisfactory in that they check against standard NaCN solution, and give consistent results when used to determine free cyanide in plating solution. But, alas, these three could not be made to agree among themselves, nor would they agree with the first two methods described:

Solution tested	NaCN oz. per gal. added	CuCN oz/gal added	Calc. free CH $Na_2Cu(CN)_3$	Total cyanide	$AgNO_3$ with KI	$AgNO_3$ without KI	$HgCl_2$ no ind.	$HgCl_2$ $K_4Fe(CN)_6$ ind.	Room temp. dist.	$NiSO_4$ method
Standard No. 1	1.39	1.07	.2 oz/gal	.2	.29	.75	.77	—	—	.53
Standard No. 2	3.48	1.75	.785	.81	.82	1.20	.928	.65	1.15	.975
Standard No. 3	2.05	.503	1.50	1.47	1.51	1.75	1.78	—	—	1.76
Standard No. 4	3.07	.52	2.50	2.58	2.50	2.76	2.80	—	—	2.75

*This and many other methods for analyzing cyanide solutions may be found in "Chemistry of Cyanide Solutions," by J. E. Clennel, McGraw-Hill.

To illustrate we will concentrate upon the results ob-

tained by applying the three last methods mentioned and the two previously described to a solution made up of 3.48 ounces/gal of c.p. NaCN and 1.75 oz/gal c.p. CuCN. This is only one of the series of such solutions which were used in a similar fashion (see table), but since the results varified more or less those obtained with the above solution, it will be unnecessary to recount the proceedings of any but this one.

The results of the analyses are:

1—Silver nitrate without indicator, 1.20 oz/gal.

2—Silver nitrate using KI as indicator, .84 oz/gal.

3—Mercuric chloride using no indicator, .925.

4—Mercuric choloride using 5 c.c. $K_4Fe(CN)_6$, .646.

5—$NiSO_4$ method, .975.

The amount of CN determined as total cyanide, and the amount of copper found by analysis checked with the calculated CN and copper content. As stated above, these varying results were not peculiar to this one solution, but were found to be the rule, both in regard to similar chemically pure solutions, and the regular plating room solutions.

Is there any way in which these contradictory, seemingly unrelated results, can be corrolated and marshalled into rational explainable order? Yes! orat least, to some extent, yes.

There are, instead of the one cuprocyanide mentioned in most books on plating, the simple compound NaCN CuCN, at least one more, 2NaCNCuCN, and possibly a third, 3NaCN. CuCN. Possibly these compounds are all present at once within the solution, the equilibrim between them being effected by concentration, temperature, and the presence of foreign substances. The titrating solution added falls in this latter class.

Going back to our standard solution if the cuprocyanide formed is assumed to be entirely NaCN. CuCN, the free cyanide present will amount to 1.26 oz/gal. This corresponds closely with the figure found on titrating with silver nitrate without an indicator—which was 1.20 ounces per gal. If the cuprocyanide is assumed to be 2NaCN. CuCN (which is the only form recognized by H. E. Williams in his excellent book on cyanide compounds) the free cyanide

content is .79 oz. per gallon. This corresponds closely with the result obtained by using silver nitrate and 1 c.c. of 10% KI as indicator—which was .84. The result obtained by assuming all CuCN as CuCN. 3NaCN is .31 oz/gal. The closest approach to this figure was obtained with $HgCl_2$ using $K_4Fe(CN)_6$ as indicator which was .65 oz/gal. The other results are intermediate.

Which result is correct? Which cuprocyanide predominates, or, after all, is only one form present? It is apparently impossible to tell. All indications are that at least NaCN. CuCN and 2NaCN. CuCN are always present in various proportions, depending upon conditions.

Under these circumstances, it is, of course impossible to recommend any one determination as being correct. The best we can do is to pick out the method which is easiest to apply and to use it to obtain comparative results, or indeed to determine total cyanide and copper and to allow the free cyanide to do as it will.

Procedure for Total Cyanide

Place a 1 c.c. sample in 400 c.c. flask and 20 c.c. of water. Add sufficient silver nitrate (5-10 c.c. N/2-$AgNo_3$) to precipitate all cyanogen either as CuCK or as AgCN and to form a considerable excess of $AgNO_3$. The precipitate will be black, due to a CuO. Allow to warm on a hot plate for a few minutes, then dilute to 100 c.c. and add 1 c.c. at a time of 25 c.c. 3 to 1 nitric acid (more if necessary). Gradually all the CN will be converted to AgON and the copper will go into solution as $Cu(NO_3)_2$. When the change is complete the color of precipitate will have changed to a creamy white. Allow to warm for an hour or two and then filter into a dried, weighed crucible and yr at a 212 degrees F. The precipitate is AgCN from which CN may be calculated as such or as NaCN.

Procedure for Free Cyanide

To a 100 c.c. of tank sample add one or two grams of freshly precipitated lead carbonate and shake. If sodium hyposulphite has been added recently a brown precipitate of lead sulphide will be found. After a few minutes, observe sediment at the bottom of the flask. If some white lead carbonate still remains it is safe to assume that all the sul-

phide has been precipitated. Filter and draw off 10 c.c. of solution, dilute to 100 c.c with water and titrate with $AgNO_3$, with 1 c.c. 10% KI as indicator. The end point of this titration is uniform and quite distinct, being the first appearance of a decided opalescence.

In conclusion it may be said that while these analyses are of value to the plater they cannot supplant entirely care and attention accorded the solutions by an experienced plater. Especially is this true of copper cyanide solutions. Without chemical analyses the modern plater would be seriously handicapped, but without the modern plater, chemical analyses would have but little value.

Acknowledgment must be made to Mr. Mason M. Randle, chemist, Western Clock Co., for much advice throughout, and especially for details concerning the determination of total cyanide.

ECZEMA

Extracts from a letter by Dr. J. W. White. Presented before Toronton Branch by Mr. J. S. Cairns

Eczema is an acute, subacute, or chronic inflammation of the skin, characterized in the beginning by redness, papules, vesicles, or pustules, or a combination of these lesions, with a variable amount of infiltration and thickening, terminating in a discharge with the formation of crusts, or scales, and accompanied by more or less intense itching and a feeling of heat and burning.

Etiology—The causative factors may be divided into two classes:

(1) Internal, predisposing, or constitutional.

(2) External or exciting.

In the first class experience has taught that gout and rheumatism, defective kidney elimination, and as a consequence uric acid, which becomes locked in the system, digestive weakness, dyspepsia and its frequent accompaniment, constipation, or general delibity from whatever cause is causative factor.

This general debility may often be due to assimilative nutritive or nervous influence, and from over work, physical or mental.

External causes (Class 2)—In a large number of cases of eczema an external factor cannot be discovered and probably does not exist; and again the external cause remains unknown or unsuspected, but if discovered and removed brings about a rapid recovery.

Trade eczemas—Among the more common, excessive use of water and soap, especially strong soap, dyes and dyestuffs, chemical irritants, mustard and other medical plasters and drugs; trade articles, such as sugar, flour, tobacco, pastes, etc. These external causes may be acting for a long time without provoking any irritation, when suddenly or gradually some underlying condition supervenes or the resisting power of the skin has been finally overcome and an eczema results. This is seen over and over again with certain occupations, and, as a rule, when the vulnerability is established, it remains more or less permanently.

In this class, with eczema of the hands and sometimes of forearms, we find grocer's eczema, from flour and yeast; baker's eczema, washerwoman's eczema, stonecutters, bricklayers, pasters, platers, printers, dyers, chemists, surgeons and nurses, the latter from the use of antiseptics. Eczema stands first in frequency among skin diseases for which advice is sought.

Eczema is the reflection in the skin of the constitution, and functions of the individual at any given time will show the necessity of considering each case separately. Both external and internal causes must be considered. If the constitution is normal the treatment will vary according to rash, whether acute, subacute or chronic.

NOTICE

CONVENTION EXHIBITS

Members are urgently requested to plate up something and exhibit it to compete for the prize awards. If you are going to attend the convention, bring it along. If not, send by express, to the A. E. S. Convention, Mount Royal Hotel, Montreal, Canada. Tell the express company when they make out the Shippers' Export Declaration, that the articles are not for sale, but only for Convention Exhibit. Don't forget to describe your process of plating, also give formula

for solution and other details, as these are necessary in making the prize awards.

E. J. MUSICK,
Supreme Sec'y-Treas.

BRANCH NEWS

Cleveland Branch

The Cleveland Branch met at the Hotel Winton for their regular May business meeting. The minutes of the previous meeting were read and approved as read. W. D. Scott was re-elected as President; B. F. McCormack was elected as Vice President; H. S. Kneeland was reelected Secretary and Treasurer; John C. Mullinnix was elected librarian; J. C. Singler, F. C. Cyrex and N. Zadowski were reelected as board of Managers. Royal Clark was a visitor and gave us a great evening telling o fhis experience at the Columbia Phonograph Co., and how they make records. The Secretary was instructed to write to all branches and give them further information as to why the Cleveland Branch proposed the new amendment to the Constitution. There being no further business adjournment was called for at 11 P. M.

Delegates, H. G. TerDoest, J. C. Mullinnix, L. F. Kochle; Alternates, N. Zadowski, B. Hengst, A. E. Sommerville.

Toronto Branch

Our April meeting was an exceptional one in many respects. Delightful spring weather, yet a good attendance. Pres. Cairus, absent owing to an attack of Sciatica, and the semi-annual appearance of Billy McCann.

Officers for ensuing year were nominated and present indications are favorable to a change of staff.

Mr. Thos. O'Keefe presented a paper on "Sheffield Plate" which was a genuine treat, it was pronounced a most complete and instructive presentation of the subject. A very interesting discussion followed, relative to the truly fine art of the craftsmen of former years, also respecting Close Plating which is some times seen of high grade harness hardware. The demand for Sheffield Plate is said to be gradually increasing. Mr. Acheson gave a description of the various processes of watch case manufacture.

Question—What is the method in vogue for direct plating on Japanese Lead, (a black metal)?

Answer—The metal is a type of Antimonial Lead. The Japanese product is duplex coppered. To plate direct high polish, clean dry wheel, clean with mild alkaline cleaner with but little sponging, rinse, and direct into nickel for flash then silver as is customary with casket hardware.

Question—What will produce gloss black on oxidized register plates?

Answer—Good finish on casting, fresh, strong oxidizing solution and scratch brushing. Then use good lasquer.

New York Branch

New York Branch of the American Electroplaters' Society meets every second and fourth Friday of each month in the World Building, Park Row, New York City. Secretary-Treasurer, John E. Sterling, Grand avenue, Long Island City.

President W. Fischer presided at the April meeting of the New York Branch of the A. E. S.

The application of Mr. George Dubpenell was received and referred to the Board of Trustees.

Mr. Edgar L. Tannert of New York Branch read an interesting paper in which he outlined practical methods in gold plating and coloring, both cheap and expensive jewelry.

Mr. Frank Townsend of New Haven also read a very interesting paper, in which he gave a detailed account of Tripoli lime and rouge compositions.

Discussions on both papers followed, after which a vote of thanks was tendered to Mr. Tannert and Mr. Townsend for their excellent papers.

Philadelphia Branch

Philadelphia Branch met May 1 at the University of Pennsylvania, with the President, George Gehling, in the chair.

The attendance being below the average, we look for at least 75 per cent. of the members being present at future meetings, as the lectures, as presented by Mr. Graham, will be of vital interest to every member.

We regret to announce the death of our fellow member, Mr. John R. Law, of Norriston, on April 24. Messrs. Gehling, Rathbone and Uhl personally tenered the sympathy of the branch to the bereaved family.

The result of the election of officers for 1925-26: President, George Gehling; vice-president, D. J. Rathbone; secretary and treasurer, Philip Uhl; librarian, Willard M. Scott; trustees, Charles V. Bayer, J. E. Underwood, William P. Scott; delegates to convention, George Gehling, P. Uhl, W. M. Scott; alternate, S. T. Lumbeck.

Chicago Branch

QUESTION BOX

Question No. 1—What is the office of bi-sulphite of soda in a hot cyanide copper solution?

Nnswer No. 1—To reduce cyanide.

Question No. 2—Will caustic soda help keep the anodes clean in such a solution?

Answer No. 2—Hypo was recommended instead.

Question No. 3—For mechanical and barrel nickel plating is 3 volts on the buss line enough to do first-class work or would 6 volts be better?

Answer No. 3—Six volts will give better results.

Question No. 4—Can gold be run for 5 hours at 1 volt and come out of the solution smooth?

Answer No. 4—Work run in gold solution at that length of time must be scratch brushed.

Question No. 5—Is a chemist any help to the plater?

Answer No. 5—Yes.

Waterbury Branch

Blue bronzing and catch colors were subjects that were interestingly discussed at a recent meeting of Waterbury Branch. The various ways of attaining same—the best ways of handling, to prevent fading, and the proper lacquers to use to preserve, were all thoroughly commented on. A good percentage of Waterbury Branch was present at the recent banquet of the Bridgeport Branch, and all report a good time and feed. The many friends of Norman Tice, a popular member of the local branch, will be pleased to learn that he has left the bachelors' ranks and that his name can now be found in the newlywed column. The local branch expects to be represented by a good-sized delegation at the coming convention in Montreal.

Milwaukee Branch

The 139th regular meeting of the Milwaukee Branch was held May 14, 1925, at Lipps Hall, Third and Prairie streets. The following members were elected to office for the ensuing year: R. M. Goodsell, president; Ed. Werner, vice-president; R. G. Hunt, secretary and treasurer; Frank Marx, librarian; Mr. Nishwitz, assistant librarian; R. Steuernagel, Dan Wittig, C. Crumpton, board of managers; R. M. Goodsell, R. Steuernagel, E. Yaeger, delegates to convention at Montreal; F. Kakatsch, Mr. Bilicki, W. Kielberg, alternates.

The dinner-dance held May 2, for members, wives and friends, proved to be an enjoyable evening for those who attended. The chicken dinner was served at 8 o'clock and was excellent. The dance began immediately after dinner and was thoroughly enjoyed.

These affairs or similar ones promote better acquaintance and should be held oftener.

Dayton Branch

Our regular meeting of the Dayton Branch of the A. E. S. was held May 2 at the Y. M. C. A. laboratory, with President Harter presiding.

It sure seemed good to have Mr. Fraine back with us again, as it was the first meeting he has been able to attend since he has regained his health.

After the regular order of business the election of officers was held and the following members were elected: President, H. J. Harter; vice-president, Ferd Zemter; secretary-treasurer, Albert Bates; librarian, Robert Suman; board of managers, Walter Fraine, William Brant, Thaddus Kisor; delegates to convention, Walter Fraine, Thaddus Kisor, Van Deran; alternates, H. J. Harter, William Brant, John Closterman. All the members pledging their heartiest co-operation with the officers for the coming year.

There being no new business the meeting was then turned over to our librarian, Mr. Suman, who gave the members a real talk and a workout on the making of standard solutions. The meeting was adjourned at a late hour.

Grand Rapids Branch

Grand Rapids Branch held its regular meeting at Vocational High School, May 13, with a fair attendance.

We elected the following officers for the coming year: President, Charles Whalley, 931 Pine street; vice-president, W. J. Chambers, 522 Umatilla street; secretary-treasurer, Charles J. C. Poe; librarian, Axel Rickson, 1350 Turner avenue, and R. McMeekin, Clarence Stimson and Axel Rickson as the board of managers.

After naming our delegates to the convention and a talk on plating we adjourned.

Newark Branch

At the last meeting of Newark Branch the following officers were elected: Mr. George Reuter, president; Mr. G. W. Onkson, vice-president; Mr. F. W. Matts, secretary-treasurer; board of managers, Mr. Oliver Sizelove, Mr. Phillipp Sievering and Mr. William Hults; librarian, Mr. Samuel Taylor; Mr. Frank Dressel, sargeant-at-arms.

Mr. Benjamin W. Gilchrist was granted a transfer in favor of Detroit Branch. Newark Branch regrets the loss of Mr. Gilchrist as a member and wishes him success.

Our meeting was well attended and while we had a short reading on the conductivity and character of the deposits, we drifted into a long discussion on nickel.

Our newly elected officers will be installed at our next meeting, June 6, by Mr. George Hogaboom.

Bridgeport Branch

The Bridgeport Branch met on May 1 with a very good attendance, President William Flaherty presiding.

The following officers were elected for the coming year: George Belle, president; Fred Lancaster, vice-president; R. J. O'Connor, secretary; Frank Spaine, treasurer; John Rall, librarian; William Stratton, Phillip Willett and John Oberender, board of managers.

The standing of Mr. Fred Lancaster was changed from an associate to an active member.

The secretary reported that the letter sent out by the Board of Managers to the members who were in arrears in their dues was effective, as all but two responded.

The committee that was appointed to urge the representatives from this district to protest any curtailment of the research work at the Bureau of Standards, reported favorably. Accordingly letters were read from Congressman Schlyer Merritt stating that he had written to the Bureau of Standards and had been assured that there would be no serious curtailment of the work this year.

Newark Branch

I am glad to say Newark Branch is having some very interesting meetings of late. Mr. Hogaboom was out to our last meeting and gave the boys an interesting talk on bronzes obtained with the sulphides. Mr. Hogaboom is very thorough in his talks and covers every detail. His main factor was the best uniform finish depended entirely upon the alloy.

We have appointed a nominating committee for our election May 15. While the name of this committee may be strange, their duties are very essential, which are to present names of candidates for office who are qualified and willing to serve the branch in the office for which they are selected.

We expect our branch to profit by this move, by not electing men into office who cannot or will not perform the duties incumbent upon them.

Our banquet of April 25 was a big success, having 438 people present. While I was unable to attend the afternoon session, I was informed the meeting was very interesting. The evening was taken up with the banquet entertainment and dancing. Many useful souvenirs were given out, together with about 40 door prizes donated by members through the courtesy of their employers.

St. Louis Branch

Regular meeting held on May 5, with fair attendance. Two applications for membership were received.

Our librarian was again kept at home on account of sickness. E. J. Musick made strong appeal to members for papers and exhibits. He also reported on arrangements made for trip to Montreal via Chicago.

The election of officers for ensuing year resulted as follows: President, E. J. Musick; vice-president, W. J. Flannery; secretary and treasurer, F. Menniges; librarian, A. Barth; board of managers, H. H. Williams, H. J. Richards and H. Deubelbeis; delegates to convention, E. J. Musick, E. W. Heil, H. H. Williams; alternates to convention, H. Deubelbeis, A. Barth, F. N. Weber.

St. Louis Branch appreciates the work of F. C. Cesle as editor of the MONTHLY REVIEW, and promises to stand by him better next year.

The address of Mr. F. Menniges (our new secretary) is 3205 Arsenal street, St. Louis, Mo.

Chicago Branch

Regular monthly meeting Chicago Branch, A. E. S., held April 9, 1925, at the Atlantic Hotel.

Reports were heard from convention Booster Committee, who stated that they have enough reservations for three cars.

We also had a visitor, Mr. C. Slater, of Cleveland, who was called upon for a speech.

This being election, nomination were in order and the following were elected: Mr. F. G. Greenwald, president; Mr. Jacob Hay, vice-president; Mr. Robert Meyers, secretary and treasurer; Mr. E. G. Sternberg, librar-

ian; board of managers, Mr. R. J. Hazucha, Mr. A. Wicks, Mr. E. V. Allen; delegates to the Montreal Conventio, Mr. O. E. Servis, Mr. Robert Meyers; alternates, Mr. Jacob Hay, Mr. F. L. Greenwald, Mr. L. Perkins.

ELECTED TO MEMBERSHIP

Pittsburgh Branch

Chas. B. McCloskey, assoc. .....307 Fulton Bldg., Pittsburgh, Pa.

Hartford-Connecticut Valley Branch

Fred C. Williams, Jr., assoc. .....c|o Textile Mfg. Co., Westfield, Mass.
M. F. Fiavin, active .....14 Columbia St., Hartford, Conn.
Thomas F. Kennedy, active .....88 Mather St., Hartford, Conn.

Bridgeport Branch

Frank Salvaggio .....48 Charles St., Stratford, Conn.

Chicago Branch

Walter J. Donnelly, Associate.....660 Melrose St., Chicago, Ill.
Leonard P. Chapman .....339 W. Washington St., Jackson, Mich.
Lamerance C. Mertz .....536 Lake Plazza Drive, Chicago

APPLICATIONS FOR MEMBERSHIP

Philadelphia Branch

Carlton Smith .....Hatboro, Pa.
Philip Runeknabe .....3635 N. 5th St., Phil., Pa.
Louis Sherman .....1833 N. Franklin St., Phila., Pa.

Newark Branch

John W. Lewis, active .....65 Sherman Ave., Newark, N. J.
Herbert M. Carter, assoc. .....646 Frelinghuysen Ave., Newark, N. J.

New York Branch

George Dubpenell .....645 Bergen St., Jersey City, N. J.

Chicago Branch

Mr. Silas B. Plummer .....5500 Northcliff Ave., Cleveland, Ohio

St. Louis Branch

Mr. R. S. Hutton, Associate,
c|o British Non-Ferrous Metals' Research Ass'n, Birmingham, England
Mr. Ralph C. Kells, Active .....2328 Virginia Ave., St. Louis, Mo.

SUSPENSIONS

Pittsburgh Branch

Mr. George W. Dehn .....222 W. Boyne St., Belevidere, Ill.
Mr. Harold Trembcki .....2025 Vandover St., Pittsburg, Pa.
Mr. E. L. Keys, ...943 N. Lincoln Ave., N. E. Pittsburg, Pa.

Chicago Branch

Mr. Burr Swisher .....1125 E. Fox St., South Bend, Ind.
Mr. V. E. Starner .....3131 N. Kedzie Ave., Chicago, Ill.
Mr. William Stoutt .....1340 N. Washtenaw Ave., Chicago, Ill.
Mr. C. W. Barggen .....620 W. Monroe St., Chicago, Ill.

DEATHS

Philadelphia Branch

John R. Law, died April 24, 1925